CHAPTER 1

INTRODUCTION

I. Purpose of Economic Analysis

Three major Federal Aviation Administration (FAA) programs are: (1) provision of air traffic communication, navigation, surveillance and management services--collectively known as air traffic control (ATC)--to the flying public, (2) establishment and enforcement of regulations to ensure safe and efficient operation of the national aviation system (NAS), and (3) administration of the Airport Improvement Program (AIP). Programs under the first category involve the construction, maintenance, and operation of the NAS. These programs require the FAA to make major decisions regarding the allocation of public and private resources. Such decisions involve system acquisitions to provide new services, extend already provided services to new locations, and improve internal operating efficiency. Efficiently making these decisions is a major task of FAA management.

Programs under the second category encompass the making and enforcement of rules, regulations, and minimum standards pertaining to the manufacture, operation, and maintenance of civil aircraft and to safety and operating standards for airports. These activities include the certification of new aircraft, oversight of the existing fleet regarding maintenance and operating problems, certification of pilots, mechanics, and others with respect to proficiency and medical fitness, and certification of certain airports. Many of these regulatory activities impose substantial costs in that they mandate the allocation of private resources to specific uses. Efficient regulations require that these costs be carefully weighed against the benefits they are expected to achieve.

The third program provides grants to airports for undertaking capital improvements. These may be made for a number of purposes including safety improvements, noise mitigation, and capacity expansion. Grants vary widely in scope and amount. Some involve major investments by the Federal Government in the nation's airport infrastructure.

The problem of resource allocation confronts agency managers, grant administrators, and regulators. The purpose of economic analysis is to provide such decisionmakers with a systematic approach to making resource allocation decisions leading to the undertaking of appropriate objectives in a least cost manner. Such analysis is specifically mandated with respect to Federal investments, regulatory actions, and certain AIP grants by Executive Orders, Office of Management and Budget Circulars, DOT Orders, FAA Orders, and other official guidance. (See Appendix A for an annotated list of relevant documents.) This handbook provides a guide to this process.

II. The Economic Questions

Every entity is confronted with the economic problem: it wishes to accomplish more objectives than its resources will permit. How entities may maximize the attainment of their objectives subject to the limited resources available to be utilized in pursuing these objectives involves the simultaneous answering of two fundamental questions:

1) Which objectives should be pursued?
2) How should these objectives be accomplished?

In general, the answer to the first question is that an objective should be undertaken only when the value to be derived from achieving it equals or exceeds what must be foregone to achieve it--its cost. The general answer to the second question is that each objective undertaken should be accomplished for the least amount of resources possible--or for the lowest cost. This will assure that the greatest number of objectives can be achieved for the available resources.

In the market economy, analysis can help provide answers to these questions. Market research can make decisionmakers aware of what goods and services consumers wish produced. Operations research and cost accounting methods can help assure that production is achieved at the lowest cost possible. Market forces will also aid decisionmakers in answering these questions before goods and services are produced. By producing only those goods and services which consumers are expected to buy, the question of what to produce is answered. In the quest to expand sales and increase profits, the lowest cost methods of production will be sought out. Market forces will also come to bear after production has occurred. Those who answered the economic questions correctly will be rewarded. Those who answered them incorrectly will be penalized. And those who answered them incorrectly and who continue to answer them incorrectly will not remain in business. The market economy optimizes the production and consumption of services.[1]

In the public sector, the situation is somewhat different. Few goods and services which are governmentally produced, required by regulation to be produced, or partially or totally

[1] This, of course, assumes that the private sector markets are approximately competitive and that externalities--impacts on parties other than buyers or sellers--are not a significant consideration. Where the actual situation does not approximate competition and/or externalities exist, the correct answer to the economic questions will not necessarily occur.

funded by governments are sold in the marketplace. Of those that are sold, the price is often arbitrary and may not recover the cost of providing the good or service. Accordingly, in the absence of market forces, there is no assurance that production is efficient. As a result of the lack of market direction in answering the economic questions, these answers must be obtained by analysis. Such analysis will indicate what goods are worth producing and how they can be produced as cheaply as possible.

A second difference between the private and public sector is that consumers of privately produced goods and services usually pay for them directly, whereas consumers of publicly produced goods and services usually do not. This factor does not eliminate the need to answer the economic questions correctly. Regardless of who pays for a good or service, it should be produced only if the value placed upon it by its consumers equals or exceeds the cost of producing it. Where value exceeds production cost, the aggregate value of all production increases because more value is generated by producing the good or service than is used up to produce it.[2] Similarly, instances where direct payment is not provided for a governmentally produced good or service do not change the requirement that production be accomplished at the lowest possible cost. The more efficiently inputs are transformed into outputs, the more outputs that can be produced.

Also, differences between the recipient and payer for governmentally produced goods and services raises distributional issues. Accordingly, analyses should be performed to identify which groups benefit from these goods and services and which groups bear their production costs. Where significant, analyses should measure the extent of such redistributions and to what degree, if any, those who benefit actually compensate those who initially incur the costs.

III. Handbook Organization

The remainder of the handbook contains seven chapters and two appendices. An overview of economic analysis and the procedures required to evaluate investments and regulations is contained in Chapter 2. Chapters 3 and 4 provide the conceptual framework for measuring and valuing benefits and costs. They also present practical guidance for estimating benefits and costs in situations which are typical of FAA investments, regulations, and grant programs. Multi-period economic decision criteria are developed in Chapter 5. Topics include why discounting must be used to compare benefits or costs occurring in different future time periods, how to use discounting, and how to make decisions between alternatives which extend over a number of time periods. Chapter 6 deals with variability in benefit-cost estimates. It presents techniques to aid decisionmakers in selecting between alternatives under conditions of risk and uncertainty.

[2] Such cases will have the characteristic that consumers of the good or service which was paid for by someone else could, if required, reimburse completely those who paid for it and still be better off than before.

Techniques for measuring price level changes for specific goods or services, as well as for the general price level are contained in Chapter 7. This chapter also sets out the appropriate treatment for inflation in benefit-cost analyses. Chapter 8 addresses analysis of distributional issues

Appendix A contains a listing, accompanied by a brief explanation, of the Executive Orders, Office of Management and Budget Circulars, DOT Orders, FAA Orders, and other guidance which documents the requirement for economic analysis. Appendix B contains tables of factors useful in making the present value calculations detailed in Chapter 5.